

## Key Points

- The traditional defined benefit plan, designed to provide lifetime income to retirees, has fallen out of favor among most private-sector employers. This is primarily due to the financial implications of the employer's obligation, as they face investment and interest rate risks, and the longevity risks associated with promising lifetime retirement benefits.
- Traditional defined contribution plans eliminate such risks to employers but are not structured to promise lifetime benefits. When all investment and longevity risks are borne by individual participants, retirees face the challenge of living without a reliable lifetime income.
- The retirement system is in need of newer plan designs that facilitate more effective sharing of risks between employers and employees. Programs that present acceptable levels of risk for employers while not overly relying on retirees to manage their own retirement assets may produce better retirement outcomes.



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# New Retirement Plan Designs: Degrees of Risk Sharing

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## Introduction

In July 2019, the American Academy of Actuaries published an issue brief titled [\*National Retirement Policy & Principles\*](#). The issue brief focused on the increasing need for a comprehensive national retirement policy based on certain guiding principles. In April 2020, the Academy followed up that issue brief with a paper titled [\*Retirement Security Challenges: Portability and Retirement Income\*](#), which addressed the challenges faced by workers in a mobile workforce, who must accumulate retirement benefits at multiple employers over their careers. The *Portability and Retirement Income* issue brief focused on two specific risks, the potential for workers to lose track of benefits and the challenge of converting benefits into sustainable retirement income. Building on these prior efforts, this issue brief offers some thoughts on newer employer-based retirement plan designs that highlight the issue of risk sharing between plan sponsors and participants, as well as novel plan designs that provide lifetime income but where all the risk is borne by plan participants.

The concept of risk is related to the principles of allocation of risks and cost highlighted in the original *Policy & Principles* issue brief. As noted in the issue brief, “a national retirement policy could address the level of risk that is incorporated into various components of the retirement system, how those risks are shared among stakeholders, and the extent to which adverse experience associated with those risks results in lower benefit levels or higher costs.” Further, “adequacy and risk are critical factors when evaluating cost. In general, higher levels of adequacy and lower levels of risk will correspond to higher costs.”

The first section in this issue brief examines the shifting of risk that results from the transition in the private sector from defined benefit (DB) to defined contribution (DC) plans. This is followed by a discussion on the challenges faced by many workers in securing sustainable retirement income from defined contribution plans. The risk assumption question is then briefly explored. This is followed by a discussion on risk pooling and its advantages in retirement plan design. Some current risk sharing plan designs are then briefly covered. This is followed by a consideration of some legislative changes that would be required to allow for more innovative plan designs in the private sector. The potential use of insurance or other financial products to manage risks is addressed along with the ongoing challenge of portability.

## Background

The traditional DB plan (designed to provide a lifetime income to retirees) has fallen out of favor among most non-public-sector employers. A primary reason for this is the difficulty of maintaining adequate funding when faced with investment and interest rate risks while providing lifetime retirement benefits. Although these risks could, in theory, be mitigated to a large extent through investment policy (e.g., investing in high quality fixed-income assets with expected cash flows that better align with anticipated payouts), employers have generally been reluctant to make this change (at least for plans that are not frozen to future accruals) because of the associated ongoing costs. The rate of future benefit accruals could, of course, be scaled back to keep costs at an acceptable level while still reducing risk. However, considering that lifetime income is a long-term commitment, the price of reducing risk—accepting fixed-income returns over the entire investment period—strikes many as too high. To a large extent, private sector DB plans have been replaced by DC plans, which eliminate these risks for employers while still offering participants the potential for the accumulation of assets for retirement. However, they require individual participants to take on the responsibility and challenge of managing their own retirement income programs—a challenge for which few participants are well prepared. Longevity risk pooling (discussed below) enables lifetime income to be delivered more efficiently. It is a standard feature in most U.S. DB plans but not typically employed in DC plans.

Members of the Retirement System Assessment and Policy Committee, which authored this issue brief, include Eric Keener, MAAA, FSA, FCA, EA—*Chairperson*; Claire Wolkoff, MAAA, FSA—*Vice Chairperson*; Kelly Coffing, MAAA, FSA, EA; David Driscoll, MAAA, FSA, FCA, EA; Lee Gold, MAAA, ASA, EA; Scott Hittner, MAAA, FSA, FCA, EA; Cynthia Levering, MAAA, ASA; Esther Peterson, MAAA, ASA, EA; Timothy Robson, MAAA, ASA, FIA; Andrea Sellars, MAAA, FSA; and Mark Shemtob, MAAA, FSA, FCA, EA.

Most DB plans were originally designed to provide a fixed or cost-of-living-adjusted lifetime retirement income based on an underlying benefit formula. These benefit levels depend on a commitment by the plan sponsor (employer) to fund the plan to provide the benefits. In many cases, unanticipated events—frequent changes in pension funding laws and regulations, historical contribution limitations, financial recessions, lower than expected interest rates, unforeseen business hardships, and demographic changes in the workforce—have increased the cost of the DB promise well beyond initial expectations. In other cases, employers’ commitment to providing a DB plan may not have been as long-lasting as initially anticipated, even when the cost of benefits has remained affordable. The Employee Retirement Income Security Act of 1974 (ERISA) did envision that some plan sponsors would not be able to meet all plan benefit obligations. This was a primary reason behind the formation of the Pension Benefit Guaranty Corporation (PBGC). However, the PBGC does not guarantee all benefits. In some cases, DB plan sponsors have made business decisions to discontinue their plans (after fully funding all obligations) to avoid the applicable financial risk. Employers often replaced their DB plans with DC plans, which require only that employers contribute at a predetermined rate,<sup>1</sup> with no requirement that the accumulated balances be sufficient to provide a guaranteed lifetime income goal at retirement.<sup>2</sup>

Since DC plans are not inherently designed to provide lifetime retirement income, many experts have suggested plan sponsors offer retirement income options to help retirees achieve a steady retirement income. It may be advantageous to participants for plan sponsors to provide income features, which may provide pricing efficiency, enhanced provider and product due diligence, ease of transaction, access to general retirement education planning, and access to guidance on longevity risk management. Even though retirement income options would not create additional employer funding risk, few DC plan sponsors have offered them. Among the primary reasons they have not done so are the additional administrative effort required and fiduciary liability risk. *The Setting Every Community Up for Retirement Enhancement Act of 2019* (the SECURE Act) should mitigate the fiduciary risk by allowing a safe harbor option for annuity provider selections.

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<sup>1</sup> Some defined contribution plans can vary the employer contribution levels from year to year. 401(k) plans with matching contributions (unless using a safe harbor match) can vary the level of match annually.

<sup>2</sup> Plan sponsors do have some fiduciary responsibilities, including the selection of plan investment advisers.

This issue brief outlines plan designs that can reduce the need for retirees to create their own retirement income streams and that enable employers to incorporate risk pooling features while also minimizing (or eliminating) the employer risk associated with providing lifetime retirement income benefits.

## Risk Assumption

Understanding the risk implications of alternative retirement plan designs is important. The two primary risks are mortality/longevity risk and investment risk. The DB model looks to the future in terms of the accumulation of sufficient assets to provide benefits promised under the plan. Contributions are adjusted as needed for actual investment and mortality/longevity<sup>3</sup> experience each year. Under the DB structure, the plan sponsor typically assumes these risks, and must absorb the resulting impact on plan contributions. Although this paper focuses on these primary risks, other risks may also apply (such as death, disability, and timing or form of payment), and may also be incorporated into the design variations discussed in this paper.

The DC model generally does not project future benefits in setting employer contributions.<sup>4</sup> The benefits ultimately paid to individuals from DC plans are based on the contributions actually made to the plan, accumulated with investment returns. Investment risk lies fully with plan participants, which could result in decreasing account balances. Most DC plans permit the participant to control the level of risk (and expected return) by selecting their asset allocation among offered investment options. The DC model also places the risk of outliving the asset accumulation (i.e., longevity risk) on the participants. Therefore, there is no requirement that the employer make additional contributions.

The goal of this paper is to explore retirement plan designs that allocate all or some of the risk to the individual, while also providing lifetime retirement income. Such designs may be either DB or DC in nature. In general, these designs would adjust the benefits paid to participants in response to plan experience that differs from expected, rather than increasing or decreasing employer contributions. The result may be that the lifetime benefit would not necessarily be a fixed amount.

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<sup>3</sup> Mortality experience applies only to defined benefit plans.

<sup>4</sup> Target benefit plans, which are no longer popular with plan sponsors, do use actuarial assumptions to calculate the contribution by individuals. However, once the contribution is determined, the plan is treated as a traditional defined contribution plan.

## Longevity Risk Pooling

Risk pooling is an underlying principle of insurance.<sup>5</sup> Traditional DB plans as well as Social Security rely on longevity risk pooling. The assets they hold are not allocated to specific individuals; instead, they are pooled so that assets are available to provide benefits to any plan participant or beneficiary. If a participant terminates employment prior to eligibility for benefits, or the participant dies after commencing benefits, no further benefits will be paid to the participant. Depending on the form of benefit elected, benefits may still be paid to a beneficiary. Otherwise, the assets accumulated to make such payments will be used instead to pay those who continue to qualify for benefits, which reduces the overall cost of the program. In this respect, DB plans are more cost-efficient than DC plans, which do not incorporate longevity risk pooling features and instead provide each individual participant an account that is dedicated to him or her; vested individuals have a right to their full accounts, with any assets remaining upon their death passing to their designated beneficiaries.

As an example of the benefit of longevity risk pooling, consider the following: An individual with an account balance in a DC plan or individual retirement account (IRA) and who is planning to use that money to meet retirement income needs will want to consider the period over which to draw down those assets. To mitigate the risk of prematurely exhausting these funds, the individual will likely need to spread withdrawals over a period extending well beyond their average life expectancy. For a hypothetical example, a 65-year-old retired female nonsmoker in average health can expect, on average, to live to age 88—an additional 23 years.<sup>6</sup> However, there is a 10% chance that she will live at least an additional 10 years—to age 98—and may therefore either reduce spending in retirement or wait until she has accumulated more assets before retirement in order to cover this possibility. Assuming a 4% rate of return on assets, the amount that could be spent each year would have to be reduced by 19% to extend the payout period for the additional 10 years. At the same time, the 88-year-old retiree would have a 90% likelihood of dying prior to age 98, leaving any unspent assets to her heirs. While leaving money to one's heirs might not seem like a bad outcome, the potential cost is a reduced standard of living in retirement or a delay in retirement. Longevity pooling, in effect, takes the money that would otherwise go to heirs and instead redirects it to providing income for other retirees in the pool, so that those who die at earlier ages subsidize those who outlive their life expectancies. The result is a lifetime income promise that can be provided more efficiently for all members of the pool.

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<sup>5</sup> In traditional insurance, the premiums are paid by individuals and benefits paid to those individuals that experience a loss.

<sup>6</sup> See the [Actuaries Longevity Illustrator](#).

## Examples of Current Risk Sharing Plan Designs in Use

There are several plan designs currently in use in the U.S. that incorporate risk sharing features:

### Market-return cash balance plans

These are DB plans that base benefits on participants' notional accounts, which grow with interest credits based on the actual investment returns<sup>7</sup> of the plan's assets (or a subset) or on specific outside investments. The accounts are referred to as "notional" because, unlike those in a DC plan, they are not actually funded for each individual participant. They are similar to DC accounts in that pay-based credits are added periodically along with the interest credits. However, as in all DB plans, the asset mix is typically selected by the plan sponsor, rather than by individual participants.<sup>8</sup> At retirement, the participant is offered the choice of a lifetime annuity or (usually) a lump sum.<sup>9</sup> The plan may offer fixed annuities or annuities with cost-of-living adjustments (both of which require the plan to take on investment risk) or variable annuities (which pass investment risk to participants). The plan typically retains longevity risk when a plan-paid annuity is selected. Private-sector plans are required to provide a participant with an account at commencement that is not less than the sum of his or her pay credits—effectively a guarantee of no less than a cumulative 0% return. This guarantee provision forces the plan sponsor to assume some pre-retirement investment risk. By shifting the plan's interest crediting rate to the actual investment return from a different plan-based rate, the plan sponsor shifts more risk to the individual participant.

### 'Pure' variable DB plans

These plans provide annual accruals in a manner similar to a traditional DB plan. For example, a plan might increase each participant's accrued benefit each year by 1% of pay. Once accrued, the benefit level is not guaranteed, but varies based on how investment returns compare to a specified "hurdle" rate. For example, in a plan with a hurdle rate of 5%, contributions are made to completely fund new benefit accruals assuming annual investment returns of 5%. If asset returns in a given year exceed 5% (e.g., 7%), then the plan would have more money than needed to provide the calculated benefit; in this case, plan benefits would be increased accordingly (roughly 2% in this example) to avoid creating a surplus of assets over liabilities. Similarly, in years in which returns are less than the hurdle rate, benefits are decreased to compensate for that loss and avoid creating a deficit. The result is a plan that remains fully funded regardless of investment market conditions. However, plan funding is vulnerable to demographic changes—

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<sup>7</sup> Traditional cash balance plans allocate interest to participant accounts based on a plan-specified rate, often based on the yield on fixed income instruments.

<sup>8</sup> Final regulations issued in 2014 indicate that the Treasury and IRS were continuing to study the issues related to participant investment direction in cash balance plans.

<sup>9</sup> Though not required, the majority of these plans do offer a lump sum option.

primarily changes in longevity—that could result in a need for additional contributions, or, conversely, which could lower the future contributions required of the plan sponsor. These plans are able to provide lifelong, though variable, income to participants.

### **‘Modified’ variable DB plans**

These plans typically provide annual accruals and benefit adjustments in the same way as “pure” variable DB plans but add design features to minimize the volatility of benefits in pay status. These features may include averaging returns over a period of years, allowing benefits to vary but not below a floor benefit, allowing benefits to vary while participants are active but fixing the benefit in retirement, or capping benefit increases in high investment return years to build a reserve that is then used to protect benefit levels when they would otherwise decline. Depending on the method(s) used to minimize benefit volatility, some risks may apply that were eliminated in the “pure” variable design. For instance, incorporating a floor benefit could lead to underfunding if the floor applies more frequently than anticipated, which would require higher contributions. On the other hand, the capping and reserving strategies may actually reduce contribution risk relative to a “pure” variable design, since the reserves can also be used to cover the cost of mortality and other demographic changes. These plans are able to provide more stable lifetime income to participants compared to pure variable benefit designs. Such designs are gaining popularity among multiemployer plans, and a few have been implemented in single-employer plans.

### **Public-sector plan designs and plan designs in other countries**

To date, many public-sector plans and retirement programs in other countries have begun to incorporate innovative risk-sharing features. Among these are designs that allow for adjustments to employer or employee contributions, or to benefits accrued or in pay status, that depend upon the funded status of the plan. These designs incorporate limitations on how much contributions can increase as well as the types of benefits that can be decreased. In addition, the basis for the determination of funded status will vary from plan to plan.<sup>10</sup> Below are brief summaries of three public-sector or non-U.S. programs to illustrate some risk-sharing features:

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<sup>10</sup> For a summary of the types and prevalence of risk-sharing designs in the public sector, see [In Depth: Risk Sharing in Public Retirement Plans](#), a publication of the National Association of State Retirement Administrators.



## Maine Participating Local District Consolidated Retirement Plan (Maine PLD)

The Maine PLD is part of Maine Public Employees' Retirement System (MainePERS). It generally covers employees of Maine's 'local districts,' e.g., counties, municipalities, towns, special districts, etc.; teachers and state employees are covered by separate plans. It was changed in 2018 and 2019 to modify the existing risk sharing between members and employers in response to market volatility and to promote long-term sustainability. The goal was to ensure that members would receive their fixed core benefits throughout their retirement. The protected core benefits are the basic retirement benefit at the normal retirement age. Early retirement subsidies, automatic cost-of-living adjustments (COLAs), and certain death and disability benefits are not guaranteed and may be modified as required to meet the funding goals of the system. Previously, Maine PLD used a traditional approach to risk sharing, with the employers bearing experience risk while members and retirees bore the effects of extraordinary market events through ad hoc changes in contribution rates, benefit reductions, and COLA cap reductions. Under the new plan, both employee and employer contribution rates change each year in a similar fashion. Employee contribution amounts that were fixed in the past will now vary with market performance. Total contribution rates may change from year to year based on an allocation of approximately 58% of the total change to employers and 42% to employees.<sup>11</sup> Both the employer and employee contribution rates are subject to aggregate contribution caps of 12.5% and 9.0%, respectively. In the event the contribution caps apply, retirees share the risk because the COLA will be temporarily reduced (but not below zero) to maintain cost-neutrality.

## Switzerland Private-Sector Cash Balance Plans

These plans are funded jointly by the employer and employee, although at least 50% must be employer-funded. There are minimum contribution requirements. The plans require notional balances to be converted at least partially to annuities at retirement. Interest rates and annuity conversion factors are subject to minimum standards. Should a plan become underfunded, the following tools are available:

1. Change in annuity conversion factors for future retirees
2. Reduction in interest crediting rate
3. Increase in required contributions

Plans are managed by independent nonprofit foundations, not employers. When they change jobs, participants' accumulated accounts are transferred (when required) to the foundation used by the new employer. The foundations can use reinsurance to mitigate risk.

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<sup>11</sup> As of 2019; employee portions may vary based upon risk sharing framework adopted by the Board of Trustees.



## New Brunswick Shared Risk Model

The New Brunswick Shared Risk model is a defined benefit plan funded by a mutually agreed-upon level of employer and employee contributions. Benefits are not guaranteed and can increase or decrease based on plan experience. The plan is administered by independent trustees, and the investment policy is set recognizing that the employer and employees share investment risk. The plan defines a set of “base” benefits that are funded for a 97.5% likelihood of payment without reduction over a 20-year period, and “ancillary” benefits that are funded for a 75% likelihood of payment without reduction over the same period. Annual actuarial stress-testing (including stochastic projections) is performed to demonstrate that these thresholds are met, and pre-determined actions may be taken to adjust benefits, contributions, or asset allocations as needed, based on the financial condition of the plan. While the Shared Risk Model was originally adopted in plans covering union workers of various governmental employers and hospitals in New Brunswick, the enabling legislation also applies to private sector employers, and some private sector employers have adopted or considered such a design.

## New Plan Design Ideas for Private Employers and Policymakers to Consider

As noted previously, many individuals lack the financial education and skills to manage investments to create sustainable lifetime income. Creating such an income stream requires investment and/or annuity product knowledge as well as an ability to properly plan for a retirement lasting an unknown number of years. These challenges diminish the attractiveness of the DC plan model from a retirement income standpoint. In addition, many individuals do not appreciate the value of risk-pooling features. Though traditional employer-funded DB plans may provide a more secure retirement, employers today are inclined to avoid plans under which they assume all of the risk. So, is there an opportunity for new designs that combine an income model (which incorporates risk pooling) with features that reduce the employer’s risk?

There are a variety of designs that can be used to achieve desirable goals in the development of new types of retirement plans for the private sector. Fundamentally, plans need to be sustainable. In the case of the private sector, this is more likely to be achieved when the cost is predictable and affordable, limiting the potential for significant additional contributions to cover benefits previously earned. Equally important, plans should be designed to provide an adequate retirement income. With present U.S. law and regulations, DB and DC plan structures have a limited ability to efficiently achieve these goals. Below are some public policy solutions and other ideas that might be considered that would allow for new plan designs.

1. Allow defined benefit plans that can vary benefit payments based upon both investment and mortality and other demographic experience. Such a plan design could target an “Aspirational Benefit” determined based on a formula that would likely reflect salary and/or years of service. Flat-dollar formulas are also possible. Contributions to the plan would be based upon the value of the additional benefit earned during the year. Aspirational Benefits would not be guaranteed, but rather would be adjusted based upon actual plan assets. The employer obligation could be limited to the initial contribution for each year’s benefit accrual or could allow for some additional well-defined contingent obligation. Private-sector plans can currently vary benefits based upon investment performance, but it is less clear that plans can vary benefits based upon mortality and other demographic experience (see the above discussion of variable benefit plans). Such benefits would require periodic adjustments based on the overall experience of the plan. The Aspirational Benefit could be set in a similar manner to current DB benefit levels, or could more directly target a benefit level that, when combined with Social Security and other benefits earned under prior employer plans (if applicable), would result in an intended level of retirement income.<sup>12</sup>
2. Allow mandatory or voluntary employee contributions to defined benefit plans on a pre-tax basis. This is a standard feature of most public-sector pension plans. After-tax contributions are allowed in private sector plans but are rarely used because of (1) the complexity of administration, and (2) employees’ preference for making pre-tax contributions to their 401(k) accounts. In the case of most private sector DB plans, when an employee makes a contribution, it is mandatory. It does not buy any particular level of expected benefit, because the gross benefit formula is unaffected by the contribution. If these mandatory contributions were pre-tax they would have a lower cost to the employee than on an after-tax basis. If they were voluntary, they could be used to buy an additional aspirational benefit.
3. Allow for the creation of open multiple-employer defined benefit plans (“open MEPs”), similar to the DC open MEPs that are permitted by the SECURE Act (referred to as Pooled Employer Plans, or PEPs). This would allow for the development of DB plans covering large numbers of employees and under which investment and longevity risk can be better predicted and managed. By decoupling plans from employers, the portability challenge may also be alleviated more easily. These plans could be based upon Aspirational Benefits thus limiting the risk exposure of the open MEP provider.

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<sup>12</sup> The intended level of overall retirement income would likely be based upon a percentage of pre-retirement income, which would vary by income level.

4. Allow for the easier use of plan designs that target a specific level of total income replacement in retirement, including expected Social Security benefits. For most retirees, Social Security is an integral part of retirement income.
5. Allow DC plans to pay out lifetime income benefits based on the account balances at retirement, subject to adjustment for investment and mortality experience. Under this approach, employees would maintain control over the investment of their accounts during the accumulation period. At retirement, a participant's account would be pooled with those of other retired participants and converted to an Aspirational Benefit based on specified mortality and asset return assumptions. Periodic adjustments could occur in the same fashion as under the Aspirational Benefit model for DB plans described earlier. Certain plans available to church employers under Internal Revenue Code Section 403(b)(9) already use a similar approach, but this option could be expanded to non-church employers.
6. A major issue for today's mobile workforce is portability. Each employer could theoretically continue to maintain the benefits earned by its former employees, but this may not be efficient. Plan-to-plan transfers when employees change jobs is a potential solution, provided that the new employer has a plan that includes the same provisions and features as the transferring plan. This may seldom be the case. Thus, it may be necessary to have IRA-type programs that can accommodate these benefits. The portability and retirement income previously referenced as well as an upcoming paper on decoupling retirement programs from the employer address this issue in more detail.

## Insurance Option

Retirement plan sponsors could potentially have the option of incorporating insurance or other financial products to manage some of the risks under existing and proposed designs if an insurer or other third party were willing to underwrite the risk. For example, rather than allowing benefits or employer costs to vary based on longevity experience, the plan could instead purchase contracts (to the extent available in the market at a price the sponsor or plan is willing to pay) to hedge or eliminate this risk. An example of such a contract is the longevity swap, which has been utilized by some plan sponsors in the U.K. The costs of these instruments could be paid for by employers, plans, or both. Some plans would have no need for insurance or other hedging products; consider, for example, a plan design that adjusted benefits to the level that could be provided based on plan assets alone with no additional funding required.

## Conclusion

It is unlikely that employers who have already moved from a DB to a DC plan design, thus shedding some or all of the risks of sponsoring a DB plan, will reconsider offering a DB design. Therefore, designs that place risk on employees may be the only acceptable approach for many employers.<sup>13</sup> However, this does not mean that traditional DC plans, in which all investment and longevity risks are borne by individual participants, are the sole option. As noted above, there are many innovative approaches to sharing plan risks already in use. In order to usher in a new era of more effective and efficient employer-based retirement plan designs, there will need to be a much greater appreciation by all stakeholders of the importance of providing retiree lifetime income at a cost that is both affordable and reasonably predictable. A generation of retirees at risk of outliving their assets—or not spending down their nest eggs out of fear—affects society and the economy as a whole. The traditional retirement plan model is in need of newer designs. Efficient retirement programs that do not overly rely on retirees managing their own retirement assets are worth pursuing, as are plan designs that do not create undue, and thus nonviable, risk for employers.

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<sup>13</sup> It is possible that employers might accept some risk if they believe that the risk is low, there is sufficient value in the form of work force management, and there are clear mechanisms available to control the risks.

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